

REMARKS

1) The claims have been amended as shown above, to incorporate the subject matter of claim 6 into claim 1, such that all embodiments of the invention require that the matrix metal consists of one or two or more metals of gold, silver, platinum, palladium, iridium, rhodium, and ruthenium, and the additive metal is titanium, zirconium, hafnium, scandium, yttrium, magnesium, calcium, strontium, barium, aluminum, silicon, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, or holmium. Claims 6 and 18-20 are cancelled accordingly.

2) The Examiner has rejected claims 1, 3-6, 9, 12, 14, 16, and 18-20 under 35 U.S.C. 103 over Krotz et al. (US 5,915,160) in view of Fustukian et al. (US 3,741,748). The Examiner takes the position that it would have been obvious for one skilled in the art to combine these references to produce the presently claimed invention. Applicants respectfully submit that this is not the case.

The present invention relates to oxide-dispersed alloys. Specifically, the presently amended claims provide a manufacturing method for an oxide-dispersed alloy in which dispersed particles comprising oxides of one or two or more kinds of additive metals are dispersed in a matrix metal, comprising the steps of:

(a) manufacturing an alloy powder or an alloy wire rod comprising a matrix metal and an additive metal;

(b) oxidizing the additive metal in the alloy powder or alloy wire rod with water to form dispersed particles by introducing the alloy powder or alloy wire rod into an attritor with water, and by agitating the alloy powder or alloy wire rod therein; and

(c) solidifying the alloy powder or alloy wire rod via heat and pressure, after oxidation;

wherein the matrix metal consists of one or two or more metals of gold, silver, platinum, palladium, iridium, rhodium, and ruthenium, and the additive metal is titanium,

zirconium, hafnium, scandium, yttrium, magnesium, calcium, strontium, barium, aluminum, silicon, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, or holmium.

Regarding Krotz, the Examiner agrees that this reference fails to teach the use of water, in an attritor. It is submitted that a key feature of the present invention is the requirement that the additive metal is *oxidized with water*, by means of an attritor. The attritor is used for pulverizing and mixing a raw powder, in addition to mixing the powder with water for oxidation. Krotz differs not only in their use of a generic ball mill which is not capable of such a pulverizing and mixing of materials, but also due to its failure to oxidize their materials via the use of *water*. Krotz clearly states throughout their specification, such as in the Abstract, that the rare earth (RE) element of their alloy is at least partially oxidized “during atomization”. Claim 5 of Krotz requires that “atomizing the alloy least partially oxidizes the RE element”. Krotz further teaches that such is accomplished via *gas* atomization in an inert gas/oxygen mixture, or an oxygen atmosphere on its own. Claim 6 of Krotz requires oxidation via an oxide dispersion reaction. Krotz further describes the blending the alloy powder with a second powder of a transition metal (TM) oxide, such as silver oxide. Importantly, Krotz *does not* teach or suggest anything regarding wet milling, the use of *water* for oxidation, or the use of an attritor, as required by the present claims.

In an effort to fill the voids of Krotz, the Examiner next cites Fustukian et al., stating that the use of an “attrition type mill” and “wet milling” would have been obvious from the teachings of Fustukian. However, Applicants submit that there is no motivation in the art to *modify* the teachings of Krotz in the manner suggested by the Examiner. It is urged that there must be some articulated reasoning with some rational underpinning to support a legal conclusion of obviousness. *KSR Int'l. v. Teleflex Inc.*, No. 04-1350, 2007 WL 1237837 at 13, 82 U.S.P.Q.2d 1385, 1396 (Apr. 30, 2007) (*citing In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329 (Fed. Cir. 2006)). Applicants submit that no such support is provided in this case. First, the Fustukian reference relates to the formation of wrought metal products, formed from a specific metal powder composition which requires the

presence of *nickel, cobalt, iron* or an alloy based on at least one of these metals. This directly *teaches away* from both Krotz and the present invention, neither of which use nickel, cobalt, or iron in their alloy powders. Likewise, Fustukian fails to disclose *any* of the materials required according to Krotz or the presently claimed invention. As stated above, the present claims require that the matrix metal consists of one or two or more metals of gold, silver, platinum, palladium, iridium, rhodium, and ruthenium, and the additive metal is titanium, zirconium, hafnium, scandium, yttrium, magnesium, calcium, strontium, barium, aluminum, silicon, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, or holmium. Krotz requires that their metal powder alloy includes gold and a rare earth element. None of these are present in Fustukian.

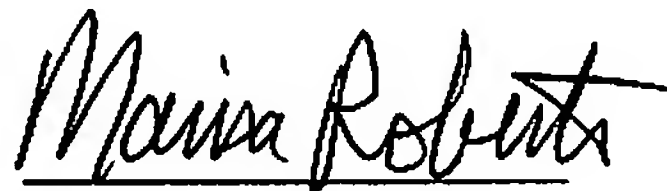
Furthermore, Fustukian discloses a *wet milling* of their powder, wherein *water* oxidizes their nickel, cobalt, or iron. Thus, the oxidized materials of Fustukian *completely differ* from those required by both Krotz and the present claims. Applicants submit that this water-based oxidation of nickel, cobalt, or iron cannot be considered to be chemically analogous to the gas-based oxidation or powder-blended oxidation of Krotz's alloys of gold and rare earth metals. Thus, there would be no motivation based on the teachings of Fustukian to incorporate their water-based oxidation into Krotz. The Examiner argues that it is "preferred" to use wet milling. However, it is only preferred *within the scope of Fustukian* to use wet milling. It is incorrect to assume that wet milling is preferred in *any milling application*. Clearly, the Examiner is looking beyond the teachings of the references in an effort to support his assertion of obviousness. Applicants urge that there is *no* motivation in the art which would inspire one of ordinary skill to *remove* the dry oxidation methods of Krotz, and *replace* them with a water-based oxidation as taught by Fustukian, much less in an attrition type mill.

In addition, Fustukian further teaches away from both Krotz and the present invention by *deoxidizing* their oxidized powders, as shown in the examples of Fustukian. In addition, their Example 5 discloses the use of Methanol rather than water to prevent oxidation of iron. This teaches away from both Krotz and the present invention, which each solidify

oxidized particles. Further, Krotz relates to thin high strength gold wires for microelectronics, while Fustukian relates to high temperature resistant wrought metal products. Clearly, Fustukian directly opposes Krotz in its process, materials, and purpose. For all of the above reasons, Applicants submit that an artisan of common sense in the art would not have sought to modify Krotz with the teachings of Fustukian. It is therefore respectfully urged that the 35 U.S.C. 103 rejection should be withdrawn.

The undersigned respectfully requests re-examination of this application and believes it is now in condition for allowance. Such action is requested. If the Examiner believes there is any matter which prevents allowance of the present application, it is requested that the undersigned be contacted to arrange for an interview which may expedite prosecution.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Marisa Roberts", written in a cursive style.

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Date: January 28, 2010